

PHYSICS AND ASTRONOMY CLASSIFICATION SCHEME (PACS)

Shortened version for use in classifying papers for Applied Physics

General

- 02 Mathematical methods in physics
- 06 Measurement science and metrology
- 07 Specific instrumentation
 - 07.60 Optical instruments and techniques, detection of radiation
 - 07.65 Optical spectroscopy and spectrometers
 - 07.75 Mass spectrometers and mass-spectroscopy techniques
 - 07.80 Electron and ion microscopes and spectrometers; techniques
 - 07.85 X-ray and gamma-ray instruments and techniques

Atomic and molecular physics

- 32 Atomic spectra and interactions with photons
- 33 Molecular spectra and interactions of molecules with photons
- 34 Atomic and molecular collision processes and interactions
- 35 Experimentally derived information on atoms and molecules
- 36 Studies of special atoms and molecules (macro- and polymer molecules, clusters)

Fundamental areas of phenomenology (including applications)

- 41 Electricity and magnetism
- 42 Optics (*see also* 78)
 - 42.10 Propagation and transmission in homogeneous media
 - 42.20 Propagation and transmission in inhomogeneous media
 - 42.30 Optical information, image formation and analysis
 - 42.40 Holography
 - 42.50 Quantum optics
 - 42.55 Laser processes
 - C Pumping mechanisms
 - E Molecular gas lasers (CO_2 , CO, N_2O , formaldehyde)
 - G Excimer lasers
 - H Atomic, ionic, and other gas lasers
 - M Laser action in liquids and organic dyes
 - P Laser action in semiconductors
 - R Laser action in solid-state lasers
 - T Free-electron lasers
 - 42.60 Laser systems and laser-beam applications
 - B Design of specific laser systems
 - D Laser resonators, cavities, and amplifiers
 - E Laser beam deflection and focusing
 - F Laser beam modulation, mode locking, and tuning
 - 42.65 Nonlinear optics
 - 42.68 Atmospheric optics
 - 42.70 Optical materials
 - 42.80 Optical devices, techniques, and applications (including fiber and integrated optics)
- 43 Acoustics (*see also* 62)

Fluids, plasmas, and electric discharges

- 52 Physics of plasmas and electric discharges

Condensed matter: structure, mechanical and thermal properties

- 61 Structure of liquids and solids; crystallography (*for surface structure, see 68.35; for thin-film structure, see 68.55*)
 - 61.10 Determination of structures
 - 61.12 Neutron determination of structures
 - 61.14 Electron determination of structures
 - 61.16 Other determination of structures
 - 61.20 Liquid structures
 - 61.30 Liquid crystals
 - 61.40 Amorphous and polymer materials, glasses
 - 61.70 Defects in crystals
 - 61.80 Radiation damage and other irradiation effects
- 62 Mechanical and acoustical properties of condensed matter
- 63 Lattice dynamics and crystal statistics
- 64 Phase equilibria, and phase transitions
- 65 Thermal properties of condensed matter
- 66 Transport properties of condensed matter (nonelectronic)
 - 66.30 Diffusion and ionic conduction in solids

68 Surfaces and interfaces; thin films and whiskers

- 68.10 Fluid surfaces and fluid-fluid interfaces
- 68.15 Liquid thin films
- 68.35 Solid surfaces and solid-solid interfaces (including bicrystals)
- 68.45 Solid-fluid interfaces
- 68.55 Thin films: growth, structure, epitaxy and nonelectronic properties
- 68.65 Layer structures, intercalation compounds, and superlattices: growth, structure, and nonelectronic properties
- 68.70 Whiskers and dendrites: growth, structure, and nonelectronic properties

Condensed matter: electronic structure, electrical, magnetic, and optical properties

- 71 Electron states
- 72 Electronic transport
 - 72.15 Electronic phenomena in metals and alloys
 - 72.20 Conductivity phenomena in semiconductors and insulators
 - 72.40 Photoconduction and photovoltaic effects
 - 72.50 Acoustoelectric effects
 - 72.60 Mixed conductivity and conductivity transitions
 - 72.70 Noise processes and phenomena
- 73 Electronic structure and electrical properties of surfaces, interfaces, and thin films
 - 73.20 Electronic surface states
 - 73.25 Surface conductivity
 - 73.30 Surface double layers, Schottky barriers, and work functions
 - 73.40 Interfaces
 - 73.60 Electronic properties of thin films
- 74 Superconductivity
 - 74.70 Superconducting materials
- 75 Magnetic properties and materials
 - 75.70 Magnetic films and plates
- 76 Magnetic resonances and relaxation; Mössbauer effect
- 77 Dielectric properties and materials
 - 77.55 Dielectric thin films
- 78 Optical properties
 - 78.30 Infrared and Raman spectra
 - 78.65 Optical properties of thin films
 - 78.70 X-ray spectra and positron annihilation
- 79 Electron and ion emission by liquids and solids; impact phenomena
 - 79.20 Impact phenomena (including electron spectra and sputtering)
 - 79.40 Thermionic emission
 - 79.60 Photoemission and photoelectron spectra
 - 79.70 Field emission and field ionization

Cross-disciplinary physics

- 81 Materials science
 - 81.10 Methods of crystal growth and purification
 - 81.15 Methods of thin-film deposition
 - Z Laser deposition methods
 - 81.40 Treatment of materials and its effect on microstructure and properties
 - Z Laser machining
 - 81.60 Corrosion, oxidation, and surface treatments
 - Z Laser techniques, including ablation
- 82 Physical chemistry
 - 82.20 Chemical kinetics and chemical reactions
 - 82.30 Specific chemical reactions; reaction mechanisms
 - 82.40 Chemical kinetics and reactions: special regimes and techniques
 - Z Laser-induced reactions
 - 82.45 Electrochemistry and electrophoresis
 - 82.50 Photochemistry and radiation chemistry
 - 82.65 Surface processes
 - 82.70 Dispersive systems
 - 82.80 Chemical analysis and related physical methods of analysis
- 84 Electromagnetic technology
 - 84.60 Direct energy conversion and energy storage
- 85 Electrical and magnetic devices
 - 85.30 Semiconductor devices
 - 85.40 Integrated electronics
 - 85.60 Photoelectric and optoelectronic devices and systems
 - 85.80 Electrochemical, thermo-EM, and other devices
- 87 Biophysics (biological effects of radiation)

A classified index for Volumes 1-25 can be found in Appl. Phys. 25, 367-453 (1981), one for Volume 26-40 in Appl. Phys. A 40/4 (August 1986), and an earlier index for Volumes 1-15 at the end of Appl. Phys. 15, (May 1978)

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Contents of Applied Physics A 49

This listing presents the papers in alphabetical order of the first author, subdivided according to the groupings "Solids and Materials" and "Surfaces, Interfaces, and Layer Structures". The author index that follows covers Applied Physics A and B, and is presented in tabular form. The names are listed in alphabetical order in the first column. The second column together with the third one contains the bibliographic data necessary to locate the paper. The issue is specified by the number separated from the volume number by a slash. The fourth column states the major PACS number so that the topic of the paper can be inferred by consulting the PACS listing on the left page.

Solids and Materials

- Abdul-Gader M.M., Wishah K.A., Mahmud Y.A., Toda K., Ahmad-Bitar R.N.:
AC electrical behavior of a Pb_2CrO_6 ceramic sample with surface electrodes.
Appl. Phys. A 49/6, 665-670 (1989) PACS:72.20 72.40 72.80 77.40
- Angadi M.A., Nallamshetty K.:
Electrical conduction in Cu/Mn multilayer films.
Appl. Phys. A 49/3, 273-277 (1989) PACS:73.60
- Aniya M., Kobayashi M.:
Collective excitations in fast ion conductor superlattices.
Appl. Phys. A 49/6, 641-646 (1989) PACS:68.65 73.20 66.30
- Badwal S.P.S., Nardella N.:
Formation of monoclinic zirconia at the anodic face of tetragonal zirconia polycrystalline solid electrolytes.
Appl. Phys. A 49/1, 13-24 (1989) PACS:81.60 81.40 82.65 82.20
- Baliga S., Jain A.L.:
Enhanced grain growth in $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ doped with Ag, Cu, and CuO.
Appl. Phys. A 49/2, 139-141 (1989) PACS:74.70
- Barhaddi A., Amzil H., Muller J.C., Siffert P.:
Thermal annealing effects on grain boundary recombination activity in silicon.
Appl. Phys. A 49/3, 233-237 (1989) PACS:61.10 61.70 81.40 61.50
- Brousse T., Retoux R., Poullain G., Provost J., Murray H., Bloyet D., Raveau B.:
Superconducting screen printed thick films of $\text{YBa}_2\text{Cu}_3\text{O}_7$ and $\text{Bi}_{1.6}\text{Pb}_{0.4}\text{Sr}_{1.6}\text{Ca}_{2.4}\text{Cu}_3\text{O}_{10}$ on polycrystalline substrates.
Appl. Phys. A 49/2, 217-220 (1989) PACS:74.70 75.00
- Claridge D.A., Dickens P.G., Goodenough J.B.:
NMR relaxation times and proton motion in H_2WO_3 .
Appl. Phys. A 49/1, 65-68 (1989) PACS:66.30 76.60
- Cole M., Sheldon M.H., Glasse M.D., Latham R.J., Linford R.G.:
EXAFS and thermal studies on zinc polymeric electrolytes.
Appl. Phys. A 49/3, 249-257 (1989) PACS:61.40 61.10 66.30 64.60
- Czaputa R.:
Transition metal impurities in silicon: New defect reactions.
Appl. Phys. A 49/4, 431-436 (1989) PACS:71.55 66.30 73.60
- Czekaj D., Hollmann E.K., Kozirev A.B., Volpyas V.A., Zaytsev A.G.:
Ion energies at the cathode of the DC planar magnetron sputtering discharge.
Appl. Phys. A 49/3, 269-272 (1989) PACS:79.20 52.00
- DeWames R.E., Morgan P.E.D., Ratto J.J., Porter J.R., Hall W.F., Marshall D.B., Goldberg I.B.:
Remanent fields and critical currents in $\text{Ti}_2\text{Ba}_2\text{Ca}_2\text{Cu}_2\text{O}_x$ ceramic.
Appl. Phys. A 49/3, 325-329 (1989) PACS:74.60 74.70
- Faber J., Geoffroy C., Roux A., Sylvestre A., Abélard P.:
A systematic investigation of the DC electrical conductivity of rare-earth doped ceria.
Appl. Phys. A 49/3, 225-232 (1989) PACS:66.30 61.70 82.45
- Franceschetti D.R., Ross A.P.:
Impedance characteristics of three-phase electrodes on solid electrolytes.
Appl. Phys. A 49/1, 111-116 (1989) PACS:82.45 85.80 82.65
- Gadkari S.C., Muthe K.P., Singh K.D., Sabharwal S.C., Gupta M.K.:
Preparation of Bi-Sr-Ca-Cu-O bulk superconductor and thick films.
Appl. Phys. A 49/3, 331-334 (1989) PACS:74.90
- Hamano A., Atake T., Saito Y.:
Thermodynamic studies of successive phase transitions in BaZnGeO_4 and a new solid phase below 186.1 K.
Appl. Phys. A 49/1 91-94 (1989) PACS:64.60 64.70 65.40

- Hassel B.A., van Burggraaf A.J.:
Structural, electrical and catalytic properties of ion-implanted oxides.
Appl. Phys. A 49/1, 33-40 (1989) PACS:66.30 81.40 81.60 61.70
- Humlicek J., Lukes F., Navratil K., Garriga M., Ploeg K.:
Ellipsometric and reflectance studies of GaAs/AlAs superlattices.
Appl. Phys. A 49/4, 407-412 (1989) PACS:78.65F 07.60
- Huomo H., Soininen E., Vehanen A.:
Analysis of positron diffusion data.
Appl. Phys. A 49/6, 647-658 (1989) PACS:66.30 71.60 78.70
- Ishii T.:
Non-local treatment of hopping conduction - application to ultrasonic attenuation.
Appl. Phys. A 49/1, 61-64 (1989) PACS:66.30 63.10
- Jackman T.E., Aers G.C., Denhoff M.W., Schultz P.J.:
Point-defect production in arsenic-doped silicon studied with variable-energy positrons.
Appl. Phys. A 49/3, 335-339 (1989) PACS:68.35D 68.55 78.70
- Jou C.J., Washburn J.:
A macro-resonance-cell description for high- T_c oxide superconductors.
Appl. Phys. A 49/2, 171-179 (1989) PACS:74.70 61.70 63.00
- Kikkawa S., Shimanouchi-Futagami R., Koizumi M.:
Plasma assisted CVD of TiSi_2 .
Appl. Phys. A 49/1, 105-109 (1989) PACS:81.10 85.80 72.60
- Kim H.-S., Kim E. K., Min S.-K., Lee C.:
X-ray and DLTS characterizations of $\text{In}_{0.9}\text{Ga}_{1-x}\text{As}$ ($x < 0.03$)/GaAs layers grown by VPE using an In/Ga alloy source.
Appl. Phys. A 49/2, 143-147 (1989) PACS:61.70 68.35 71.55
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Physical properties and applications of $\text{Cd}_{1-x}\text{Pb}_x\text{F}_2$ superionic crystals.
Appl. Phys. A 49/4, 413-424 (1989) PACS:66.30 61.70 85.80 65.50
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The effect of H-dilution on the transport properties of doped $\text{a-Si}_{1-x}\text{Ge}_x$: H alloys.
Appl. Phys. A 49/2, 165-169 (1989) PACS:72.20 72.40 73.60
- Kumagai Naoaki, Kumagai Nobuko, Tanno K.:
Electrochemical and structural characteristics of tungstic acids as cathode materials for lithium batteries.
Appl. Phys. A 49/1, 83-89 (1989) PACS:72.60 85.80 61.70
- Lau F., Mader L., Mazurek C., Werner Ch., Oriowski M.:
A model for phosphorus segregation at the silicon-silicon dioxide interface.
Appl. Phys. A 49/6, 671-675 (1989) PACS:64.75 66.30
- Ling S., Nowik A.S., Cormack A.N., Catlow C.R.A.:
Dielectric relaxation and computer stimulation studies of rutile-structured MnF_2 crystals.
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Electrical properties of novel mixed-conducting oxides.
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In situ preparation of Bi-Sr-Ca-Cu-O superconducting films by laser sputtering.
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- Majni G., Mengucci P., D'Anna E., Leggeri G., Luches A., Nassisi V.:
Silicon carbide synthesis with energy pulses.
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Conductivity relaxation in glass: Compositional contributions to non-exponentiality.
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Temperature characteristics of positron trapping at defects in electron irradiated silicon.
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Ambipolar diffusion phenomena in BaTiO_3 and SrTiO_3 .
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Characterization of poly(ethylene oxide) copper salt polymer electrolytes.
Appl. Phys. A 49/4, 425-429 (1989) PACS:61.40 66.30 72.60
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Mixed solid electrolytes based on poly(ethylene oxide).
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Correlations between clusterization and electrical properties within fluorite-type anions excess solid solutions: Setting of a model.
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Impact of the sublinear photoconductivity law on the interpretation of holographic results in BaTiO_3 .
Appl. Phys. A 49/3, 259-268 (1989) PACS:42.40 42.70 72.40
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Influence of exciton-exciton interaction with spin paired charge carriers and exciton-lattice interaction of the surface properties of crystalline solids.
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A model for the frequency dispersion of the impedance of compressed powders of ionic conductors.
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Residual defects in high-energy B-, P- and As-implanted Si by rapid thermal annealing.
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Non-Faradaic electrochemical modification of catalytic activity in solid electrolyte cells.
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Thermal double donors in silicon.
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CdS multilayers prepared by the conically converging shock-wave technique.
Appl. Phys. A 49/2, 157-163 (1989) PACS:62.50 81.10
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Competitive network modification in non-oxide chalcogenide glasses. Structural and motional properties of glasses in the system $\text{Li}_2\text{S}-\text{P}_2\text{S}_5-\text{B}_2\text{S}_3$ studied by multinuclear NMR techniques.
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A comparison of the magnetic anisotropy of [001] and [111] oriented Co/Pd multilayers.
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Magnetic surface anisotropy of transition metal ultrathin films.
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Sputtering yields of nickel and chromium.
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Experimental and computer study of the spatial distributions of particles sputtered from polycrystals.
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Spin-resolved inverse photoemission of ferromagnetic surfaces.
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Effects of annealing temperature on the alloying behaviour of AuGe-GaAs(100) interface.
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Surface physics with nuclear probes.
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A scanning tunneling microscopy investigation of the $1 \times 2 = 1 \times 1$ structural transformation of the Pt(110) surface.
Appl. Phys. A 49/4, 403-406 (1989) PACS:68.35R 61.16
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Microscopic properties of Co/Pd Multilayers studied by ferromagnetic and nuclear magnetic resonance.
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Development of magnetic anisotropies in ultrathin epitaxial films of Fe(001) and Ni(001).
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Incubation process in polyimide upon UV photoablation.
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Brillouin light scattering from spin waves in magnetic layers and multilayers.
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Chemisorption of halogens on silver - a critical comparison of results from photoemission and thermal desorption spectroscopy.
Appl. Phys. A 49/3, 313-320 (1989) PACS:79.60 82.65
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Appl. Phys. A 49/3, 293-297 (1989) PACS:79.70 41.80
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The high-temperature behaviour of gallium and indium liquid metal ion sources.
Appl. Phys. A 49/6, 697-705 (1989) PACS:79.70 41.80
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Thickness dependence of the spin- and angle-resolved photoemission of ultrathin, epitaxial Ni(111)/W(110) layers.
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Preparation of composition-controlled silicon oxynitride films by sputtering; deposition mechanism, and optical and surface properties.
Appl. Phys. A 49/3, 305-311 (1989) PACS:81.15C 68.60
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Photoexcitation of electron-hole pairs during SIMS.
Appl. Phys. A 49/3, 279-283 (1989) PACS:07.75 73.30 79.60
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Kerr-effect magnetometry of the single monolayer Co/Cu(001).
Appl. Phys. A 49/5, 523-526 (1989) PACS:75.50C 75.70 79.60

Surfaces, Interfaces and Layer Structures

- Affrossman S., Bailey R.T., Cramer C.H., Cruickshank F.R., MacAllister J.M.R., Alderman J.:
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